

Fusion Electronics Cooling Not Just for Electronics

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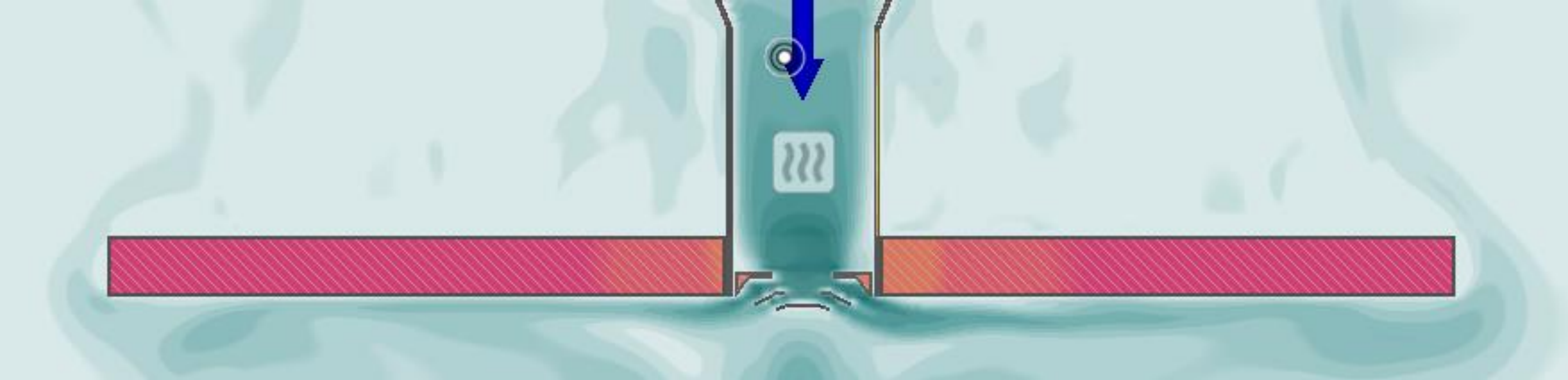


About the speaker

Dave Graves

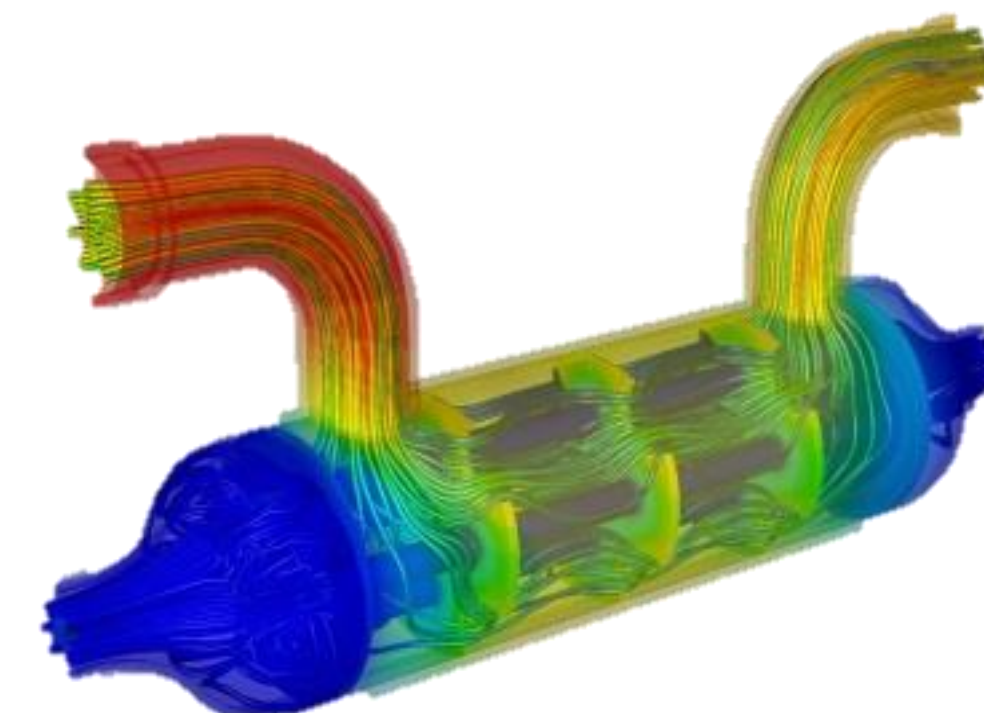
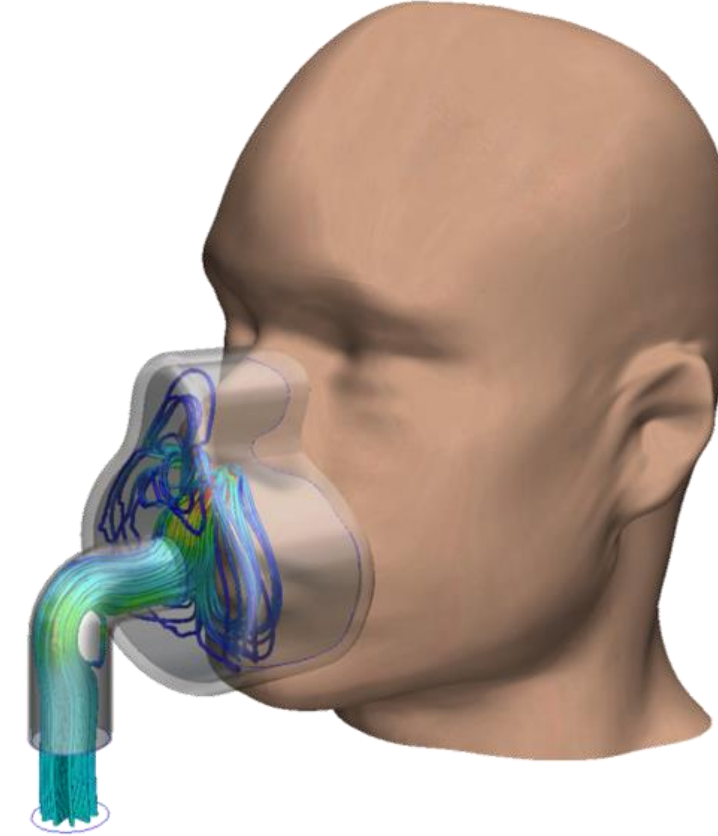
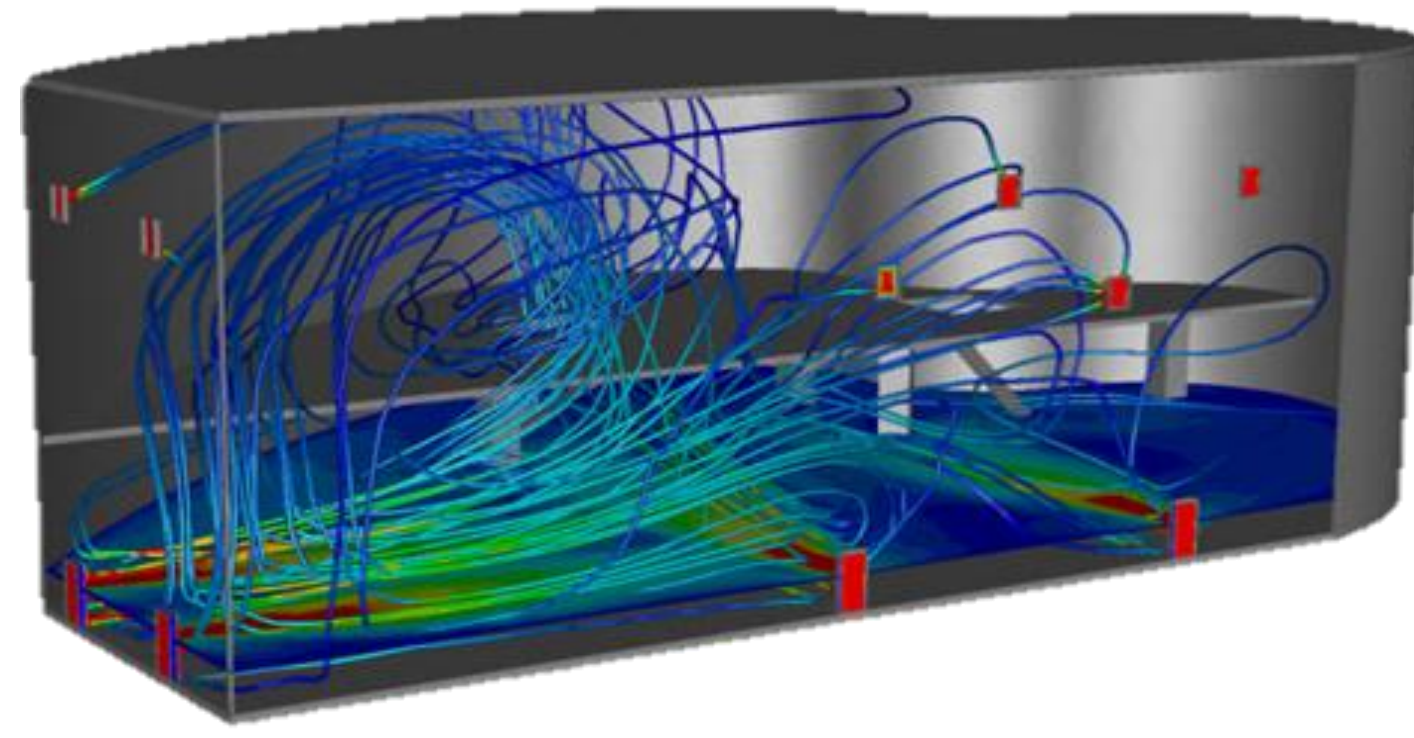
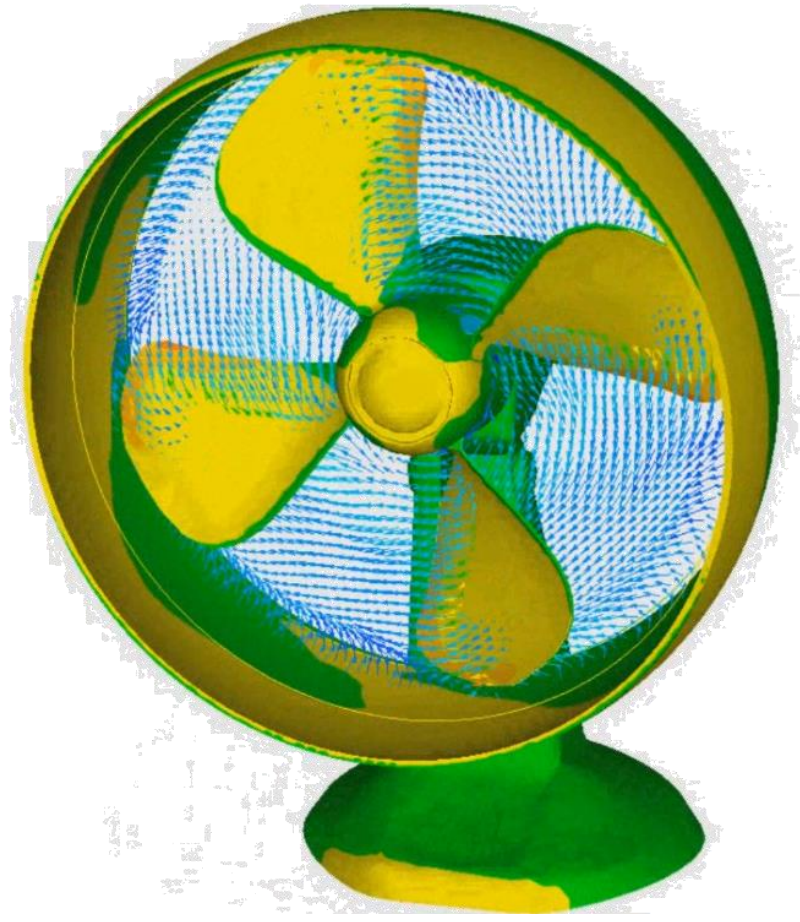
Dave is a Sr. Technical Specialist on the Autodesk Owners and Ecosystems team. He has a BSME from North Carolina State University and has spent time in Telecommunication industry before moving to the world of Simulation and CAD. At Autodesk Dave has worked with various manufacturing solutions including Fusion 360 and has been involved with the Autodesk CFD product for over 15 years.

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Course Objectives

- Learn about the basic requirements for setting up a problem in Electronics Cooling in Fusion 360.
- Learn good practices for setting up flow problems not related to Electronics Cooling.
- Discover different flow results within Fusion Electronics Cooling.
- Learn about adapting Fusion Electronics Cooling for other applications.

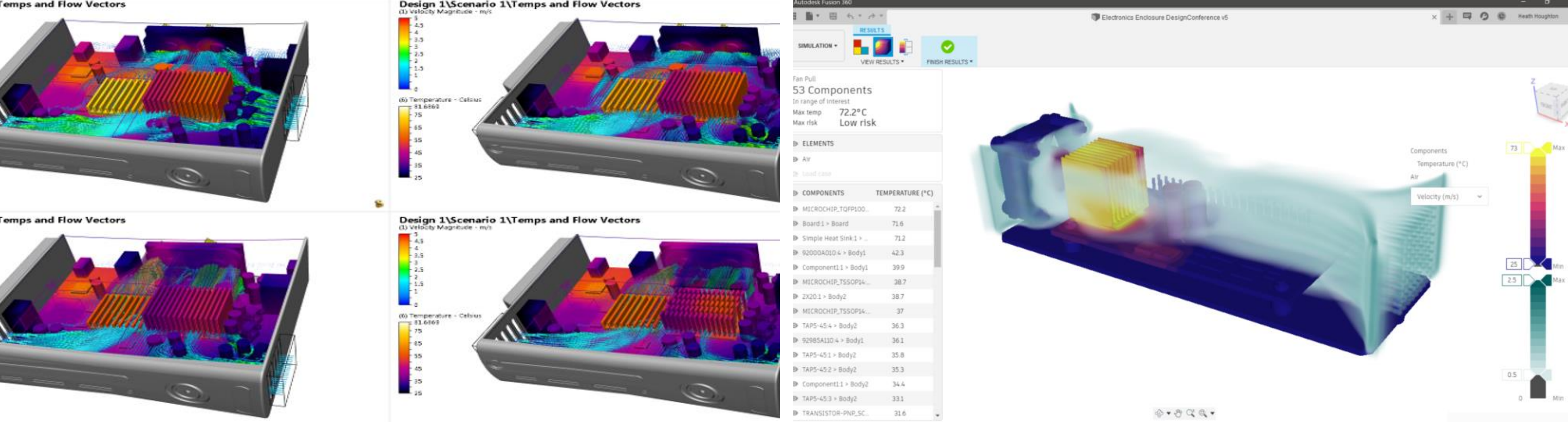


What is CFD

CFD = Computational Fluid Dynamic

- Fluid = Liquids and Gases (e.g. air in a room)
- Dynamics = Movement

The study of fluid flow as it interacts with surrounding solids
(Also included thermal/temperature influence)



What is Autodesk CFD

Autodesk CFD is a computational fluid dynamics simulation software that engineers, and analysts use to intelligently predict how liquids and gases will perform. Autodesk CFD helps to minimize the need for physical prototypes while providing deeper insight into fluid flow design performance.

What is Fusion Electronic Cooling

Fusion Electronics cooling is a tool that allows you to visualize the temperatures and air movement within electronics assemblies, right in your Fusion 360 environment.

Autodesk CFD



- **Fluid Types:**
 - Air
 - Water
 - Non-Newtonian
 - Compressible
 - Etc.
- **Heat Transfer**
 - Conduction
 - Convection
 - Radiation
 - Solar Loading
 - Humidity
- **Simulation:**
 - Steady State
 - Transient
- **Visualization**
 - Velocity
 - Temperature
 - Pressure
 - Vectors
 - Condensation
 - Particle Traces
 - Vectors
 - Turbulence
 - Etc.

Fusion Electronic Cooling



- **Fluid Types:**
 - Air
- **Heat Transfer:**
 - Conduction
 - Convection
- **Simulation**
 - Steady State
- **Visualization**
 - Velocity (No vectors)
 - Temperature

Possible Use Cases

- **General Visualization of Flow Fields**

- Manifold

- Flow Uniformity
 - Very Qualitative

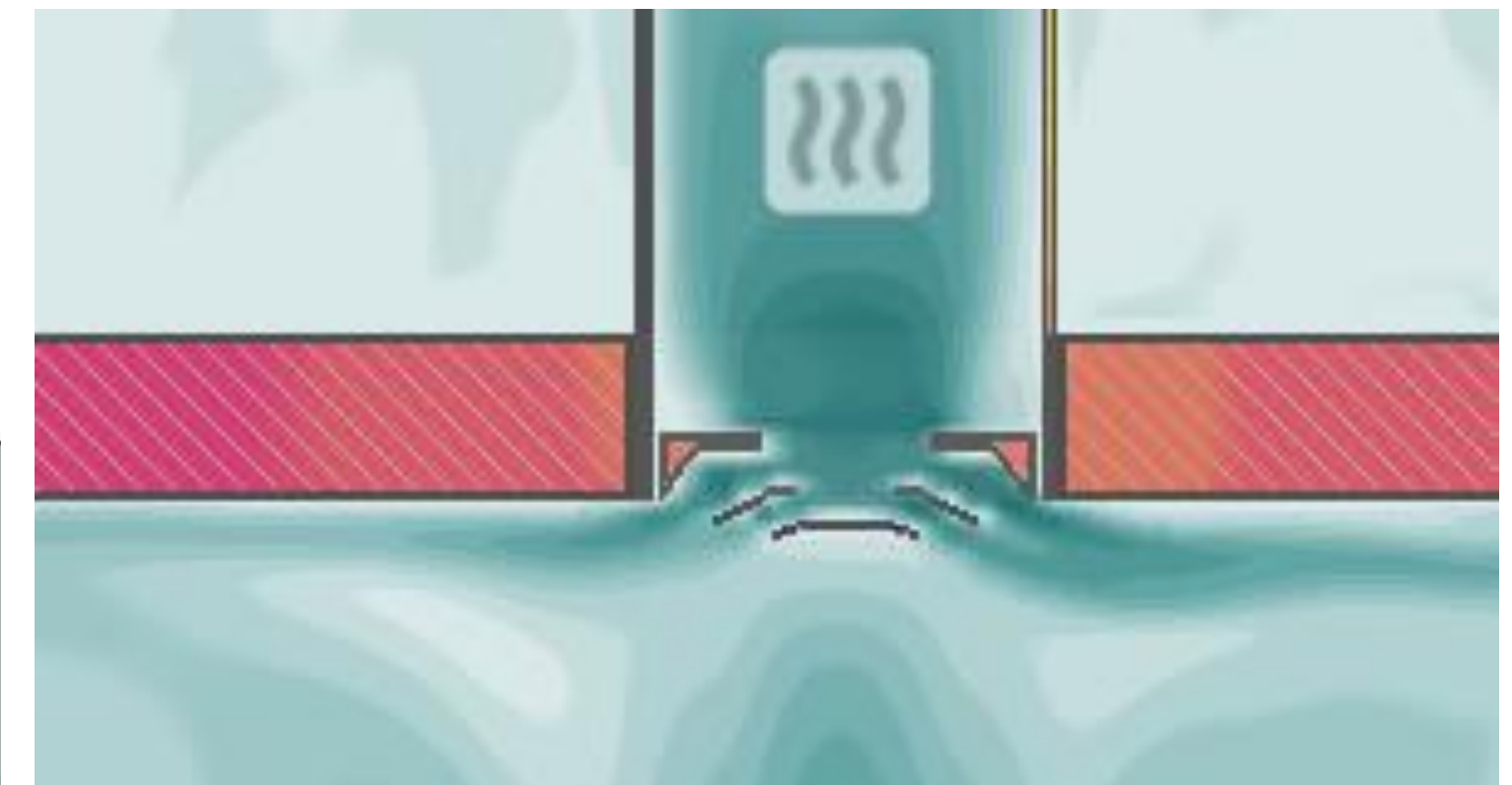
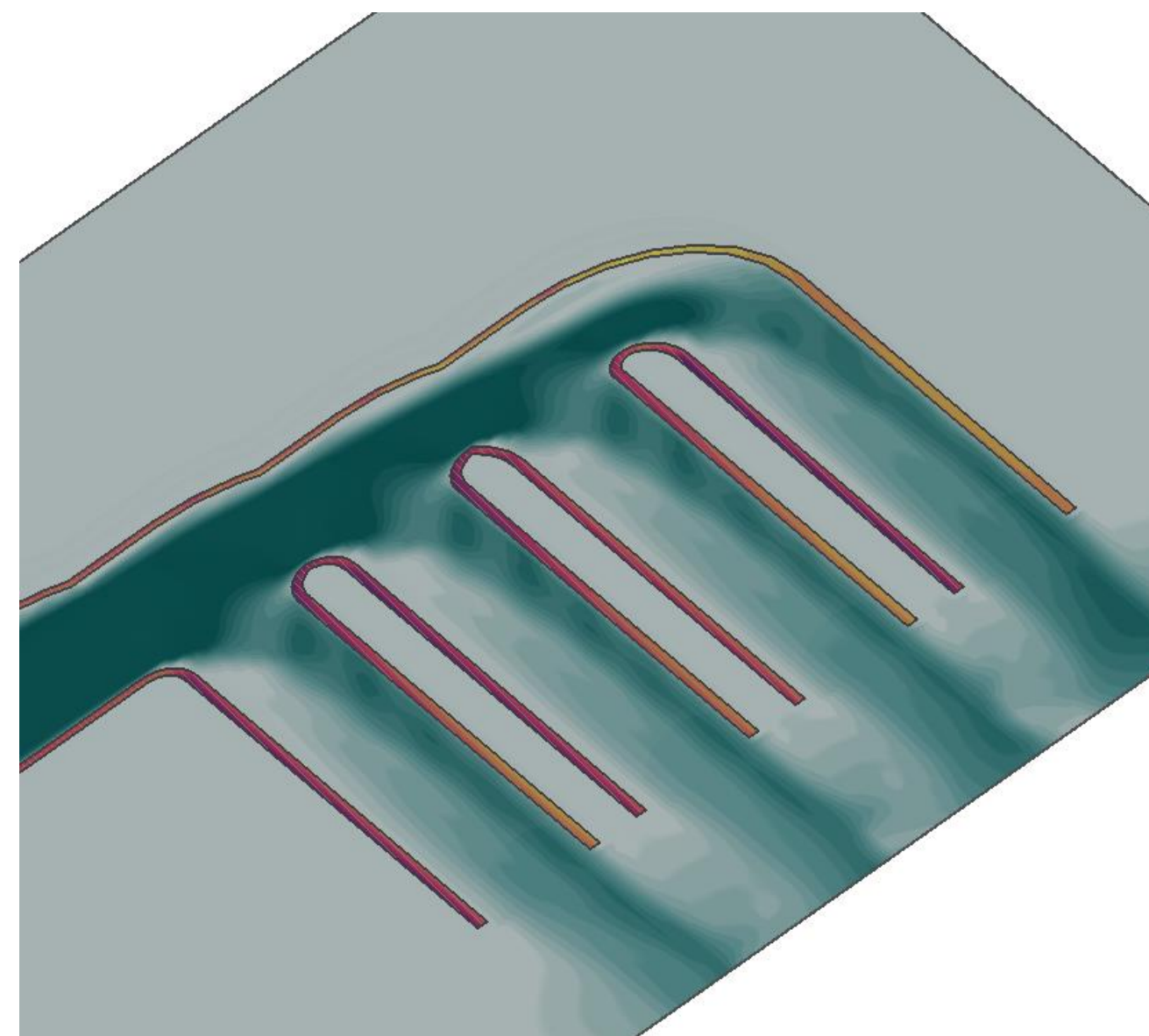
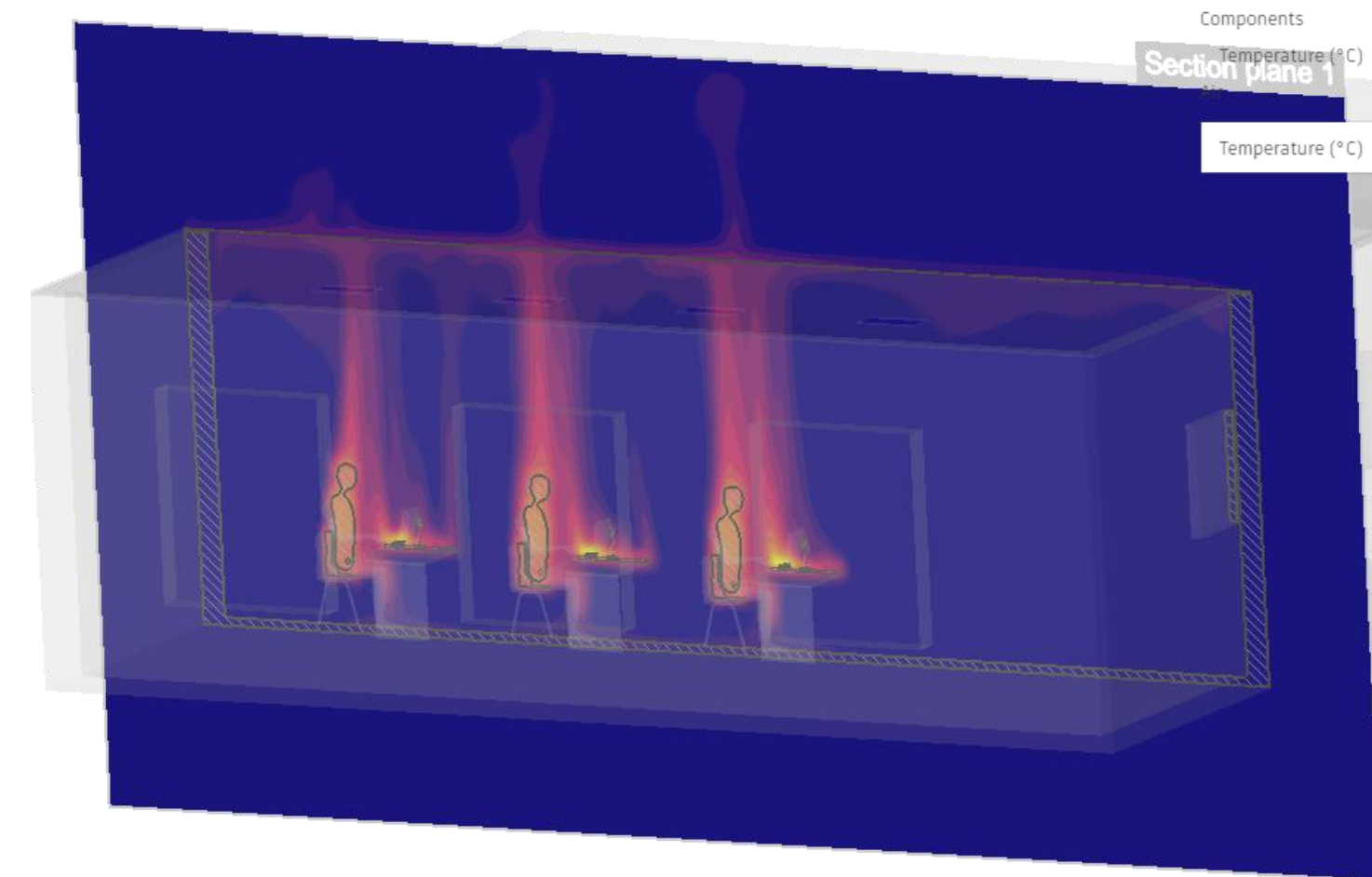
- Valve or Diffuser

- Velocity Profile

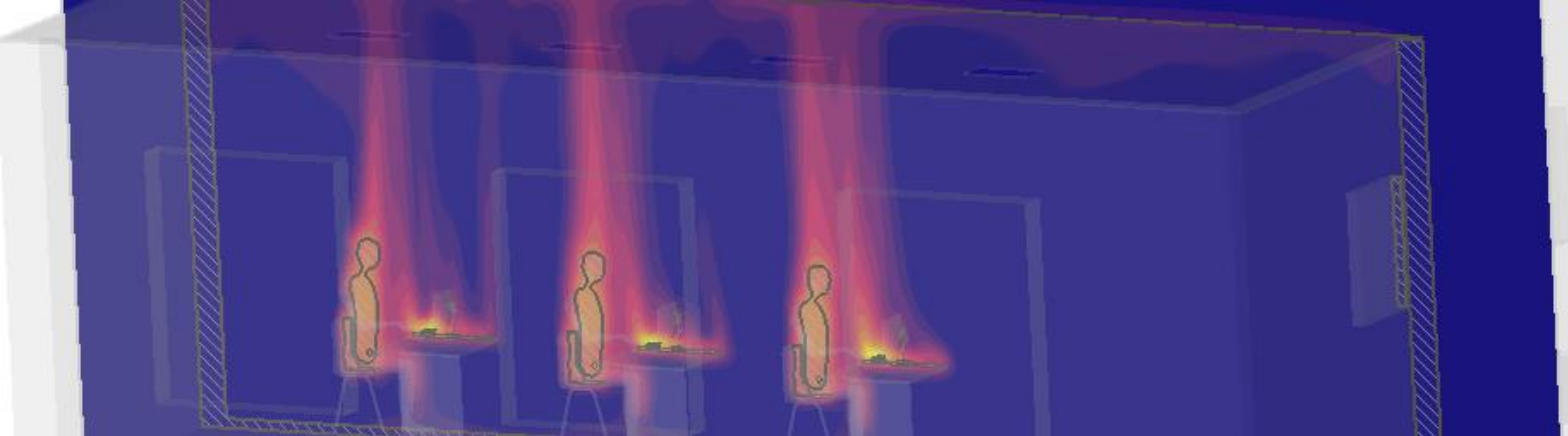
- **Simple Heat Studies**

- HVAC

- Basic Flow
 - Occupant Temperature



Product/Workflow Demonstration



Summary

- Fusion Electronics Cooling is a purpose-built application currently available as “Preview Technology”
- Learn about the basic requirements for setting up a problem in Electronics Cooling in Fusion 360.
- Discover different flow results within Fusion Electronics Cooling.
- Learn about adapting Fusion Electronics Cooling for other applications.

Thank You



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